

REMARKS

Claims 1-10 are pending in the application.

Claims 1-10 have been amended in order to more particularly point out, and distinctly claim the subject matter to which the Applicants regard as their invention. It is believed that this Amendment is fully responsive to the Office Action dated **September 10, 2002**.

Claim Rejections under 35 USC §112

Claim 1 is rejected under 35 USC §112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter of the invention.

Claim 1 has been amended, as needed, to overcome this rejection. Reconsideration and withdrawal of this rejection are respectfully requested.

Claim Rejections under 35 USC §103

Claims 1-10 are rejected under 35 USC §103(a) as being unpatentable over Kitamura.

Claims 7 and 8 are rejected under 35 USC §103(a) as being unpatentable over Kitamura in view of Shin et al.

The detail explanation provided in the outstanding Office action is appreciated. It is believed that the claimed invention already patentably distinguish over the asserted prior art. It should be noted that independent claims 1 , 9 and 10 has already specified that:

- (1) the detecting unit detects a fractional printed wiring board within the printed wiring boards that manufacture is scheduled. The fractional printed wiring board is laid out to a predetermined manufacturing block together with a printed wiring board of different type;
- (2) the grouping unit groups each detected fractional printed wiring board into any of groups depending on the manufacturing condition data;
- (3) the determining unit determining layout to at least one predetermined manufacturing block of the fractional printed wiring board belonging to each group.

The outstanding Office action asserts that the system and the central processor of Kitamura respectively correspond to the detecting unit, the grouping unit and the determining unit of the present invention. However, Kitamura does not disclose and teach features (1)-(3) as recited in amended Claims 1 , 9 and 10. Therefore, the claimed invention patentably distinguish over the asserted prior art.

Even though the independent claims 1, 9 and 10 already patentably distinguished over the asserted prior art, to advance the prosecution of this application, all claims have been further amended.

To assist the Office in a fuller understanding of the claimed invention, the claim language of independent claims 1 and 9 each accompanied with parenthetical explanations as to how the claim language is fully supported by way of an example in the specification is herein provided.

1. (Amended) A manufacturing system (Figs. 2 and 5, product control system A) for manufacturing printed wiring boards of plural types, printed wiring boards scheduled to be

manufactured are laid out on at least one predetermined manufacturing block (Figs. 7, 9 and 11), comprising:

a schedule data storage unit (Figs. 3-4, 32) storing manufacturing schedule data (Figs. 3-4, 36) including printed wiring board data including each type of the printed wiring boards and the number of each of the printed wiring boards scheduled to be manufactured;

a detecting unit (Figs. 3 and 5, 31; Figs. 6-7, S103) detecting a fractional printed wiring board (Figs. 7 and 9, see also Appendix) which should be laid out to a single predetermined manufacturing block together with a printed wiring board having a different type (Fig. 9) within the printed wiring boards scheduled to be manufactured on the basis of the manufacturing schedule data stored in said schedule data storage unit;

a condition data storage unit (Fig. 3, 32) storing manufacturing condition data (Fig. 3, 37-38) for laying out printed wiring boards of different types on a single predetermined manufacturing block;

a grouping unit grouping (Fig. 3, 31; Figs. 6 and 8, S104) each fractional printed wiring board detected by said detecting unit into any of groups according to the manufacturing condition data stored in said condition data storage unit; and

a determining unit (Fig. 3, 31; Figs. 6 and 9, S105) determining, per group, layout to at least one predetermined manufacturing block of the fractional printed wiring board.

9. (Amended) A manufacturing method (Fig. 6) for manufacturing printed wiring boards of plural types, printed wiring boards scheduled to be manufactured are laid out to at least one predetermined manufacturing block, comprising:

reading (Fig. 6, S101) manufacturing schedule data including printed wiring board data including each type of the printed wiring boards and the number of each of the printed wiring boards scheduled to be manufactured;

detecting (Fig. 6, S103) a fractional printed wiring board which should be laid out to a single predetermined manufacturing block together with a printed wiring board having a different type within the printed wiring boards scheduled to be manufactured on the basis of the manufacturing schedule data;

reading (Figs. 6 and 8, S104) a manufacturing condition data for laying out printed wiring boards of different types on a single predetermined manufacturing block;

grouping (Figs. 6 and 8, S104) each detected fractional printed wiring board into any of groups according to the manufacturing condition data; and

determining (Figs. 6 and 9, S105), per group, layout to at least one predetermined manufacturing block of the fractional printed wiring board.

It is respectfully submitted that independent claims 1, 9 and 10, as amended, are even further patentably distinguished over the asserted prior art. All claims dependent thereon, by virtue of inherency, also patentably distinguish over the asserted prior art. Reconsideration and withdrawal of this rejection are respectfully requested.

Conclusion

In view of the aforementioned amendments and accompanying remarks, claims 1-10, as amended, are in condition for allowance, which action, at an early date, is requested.

If, for any reason, it is felt that this application is not now in condition for allowance, the Examiner is requested to contact Applicants undersigned attorney at the telephone number indicated below to arrange for an interview to expedite the disposition of this case.

Attached hereto is a marked-up version of the changes made to the claims by the current amendment. The attached page is captioned "**Version with markings to show changes made.**"

In the event that this paper is not timely filed, Applicants respectfully petition for an appropriate extension of time. Please charge any fees for such an extension of time and any other fees which may be due with respect to this paper, to Deposit Account No. 01-2340.

Respectfully submitted,

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PATENT TRADEMARK OFFICE

Enclosures: Version with markings to show changes made

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IN THE CLAIMS:

Please amend claims 1-10 as follows:

1. (Amended) A manufacturing system for manufacturing printed wiring [board] boards of plural types, printed wiring boards scheduled to be manufactured are laid out on at least one predetermined manufacturing block, comprising:
 - a schedule data storage unit storing [multiple] manufacturing schedule data including [the kind] printed wiring board data including each type of [a] the printed wiring [board] boards and the number of each of the printed wiring boards scheduled to be manufactured [and manufacturing quantity thereof];
 - a detecting unit detecting a fractional printed wiring [boards of fraction] board which should be laid out [in] to a single predetermined manufacturing block together with a printed wiring [boards of] board having a different [kind from multiple kinds of] type within the printed wiring boards scheduled to be manufactured[, according to multiple] on the basis of the manufacturing schedule data stored in said schedule data storage unit;
 - a condition data storage unit storing [a] manufacturing condition data for laying out [the] printed wiring boards of different [kinds in] types on a single predetermined manufacturing block;
 - a [dividing] grouping unit [dividing] grouping each fractional [the detected fraction] printed wiring board detected by said detecting unit into any of [boards to multiple] groups according to the manufacturing condition data stored in said condition data storage unit; and

a determining unit determining, per group, [a combination of] layout to at least one predetermined manufacturing block of the fractional printed wiring board [boards of different kinds to be laid out in a single predetermined manufacturing block for each group].

2. (Amended) A manufacturing system [for printed wiring board] according to claim 1, wherein said detecting unit, if [a manufacturing quantity] the number of [the] printed wiring boards of a certain [kind] type scheduled to be manufactured cannot be divided completely by [a] the maximum number of the printed wiring boards which can be laid out in a single predetermined manufacturing block, detects each printed wiring board [boards] corresponding to [a] the number smaller than [said] the maximum number or each printed wiring board corresponding to [an excess] the remainder of the division as the fractional printed wiring board [boards of said fraction].

3. (Amended) A manufacturing system [for printed wiring board] according to claim 1, wherein the manufacturing condition data is data produced by combining manufacturing request person's condition and manufacturer's condition.

4. (Amended) A manufacturing system [for printed wiring board] according to claim 3, wherein the manufacturing request person's condition is shipment date.

5. (Amended) A manufacturing system [for printed wiring board] according to claim 3,
wherein the manufacturer's condition is number of layers of the printed wiring boards.

6. (Amended) A manufacturing system [for printed wiring board] according to claim 4,
wherein the manufacturer's condition is number of layers of the printed wiring boards.

7. (Amended) A manufacturing system [for printed wiring board] according to claim 1
further comprising:

a CAD data creating unit creating CAD data corresponding to a combination determined
by said determining unit; and
a CAD data converting unit creating CAM data or CAT data corresponding to CAD data
created by said CAD data creating unit.

8. (Amended) A manufacturing system [for printed wiring board] according to claim 7
further comprising:

manufacturing unit group carrying out manufacturing process for the printed wiring
board using the CAM data or CAT data created by said CAD data converting unit.

9. (Amended) A manufacturing method for manufacturing printed wiring [board] boards
of plural types, printed wiring boards scheduled to be manufactured are laid out to at least one

predetermined manufacturing block, comprising [the steps of]:

reading [multiple] manufacturing schedule data including [the kind of a] printed wiring board data including each type of the printed wiring [board] boards and the number of each of the printed wiring boards scheduled to be manufactured [and manufacturing quantity thereof];

detecting a fractional printed wiring board [boards of fraction] which should be laid out [in] to a single predetermined manufacturing block together with a printed wiring [boards of] board having a different type [kind from multiple kinds of] within the printed wiring boards scheduled to be manufactured[, according to multiple] on the basis of the manufacturing schedule data;

reading a manufacturing condition data for laying out [the] printed wiring boards of different [kinds in] types on a single predetermined manufacturing block;

[dividing the] grouping each detected fractional [fraction] printed wiring [boards to multiple] board into any of groups according to the manufacturing condition data; and

determining per group, [a combination of] layout to at least one predetermined manufacturing block of the fractional printed wiring board [boards of different kinds to be laid out in a single predetermined manufacturing block for each group].

10. (Amended) A computer-readable recording medium for recording a computer program for making a computer to carry out processes for manufacturing printed wiring boards, printed wiring boards scheduled to be manufactured are laid out to at least one predetermined

manufacturing block, the program comprising [the steps of]:

reading [multiple] manufacturing schedule data including printed wiring board data
including each type of the [kind of a] printed wiring [board] boards and the number of each of
the printed wiring boards scheduled to be manufactured [and manufacturing quantity thereof];

detecting a fractional printed wiring board [boards of fraction] which should be laid out
[in] to a single predetermined manufacturing block together with a printed wiring [boards of]
board having a different [kind from multiple kinds of] type within the printed wiring boards
scheduled to be manufactured[, according to] on the basis of the multiple manufacturing
schedule data;

reading [a] manufacturing condition data for laying out [the] printed wiring boards of
different [kinds in] types to a single predetermined manufacturing block;

[dividing] grouping the detected [fraction] fractional printed wiring board [boards to
multiple] into any of groups according to the manufacturing condition data; and

determining, per group, [a combination of] layout to at least one predetermined
manufacturing block of the fractional printed wiring board [boards of different kinds to be laid
out in a single predetermined manufacturing block for each group].